

**Notice of Allowability**

Application No.	Applicant(s)
10/695,920	BOWERS ET AL.
Examiner	Art Unit
Steven J. Ganey	3752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTO-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to amendment filed January 4, 2006.

2.  The allowed claim(s) is/are 1-46.

3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)  All    b)  Some\*    c)  None    of the:

1.  Certified copies of the priority documents have been received.

2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.

(a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached  
1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.

(b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of  
Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application (PTO-152)
6.  Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_

### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. The application has been amended as follows:

In the claims:

Claim 23, lines 7 and 8, the sentence "a capacitive soil moisture sensor is connected thereto" has been changed to --the capacitive soil moisture sensor is connectable thereto--.

Claim 29, lines 8 and 9, the sentence "a capacitive soil moisture sensor is connected thereto" has been changed to --the capacitive soil moisture sensor is connectable thereto--.

The above changes were done since the preamble recited the subcombination of an apparatus "for use with a capacitive soil moisture sensor", however, the positive recitation of the claim language "connected thereto" suggests the combination of the moisture sensor with the apparatus. The amended language maintains proper antecedent basis and clearly defines the invention as the subcombination of "an apparatus forming an ancillary circuit".

3. The following is an examiner's statement of reasons for allowance of claims 1-22; The prior art did not teach or suggest an apparatus for sensing ground moisture and producing a variable electrical capacitance indicative of ground moisture as claimed by the applicant,

specifically an apparatus comprising a shell, a granular fill material within the internal cavity of the shell and against substantial portions of the internal surface of the shell to conduct moisture from the shell and first and second electrodes arranged within the internal cavity in proximity to the granular fill material, the first and second electrodes having dielectric coverings on them to prevent conduction of electrical current between the electrodes and the granular fill material, together in combination with the other claimed features of applicant's invention. The closest prior art being Bireley, however, this reference does not disclose or teach the above claim limitations and it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the reference to include the above claim limitations.

4. The following is an examiner's statement of reasons for allowance of claims 23-32: The prior art did not teach or suggest an apparatus for forming an ancillary circuit for use with a capacitive soil moisture sensor as claimed by the applicant, specifically an apparatus comprising an oscillator; a bridge circuit coupled to the oscillator, the bridge circuit having a sensor leg which defines sensor terminals to which the capacitive soil moisture sensor is connectable, a rectifier coupled to the bridge circuit and at least one filter coupled to the bridge circuit and the rectifier to help smooth the rectifier signal and to provide a moisture output signal from the filter, together in combination with the other claimed features of applicant's invention. The closest prior art being Bireley, however, this reference does not disclose or teach the above claim limitations and it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the reference to include the above claim limitations.

5. The following is an examiner's statement of reasons for allowance of claims 33-38: The prior art did not teach or suggest an irrigation controller as claimed by the applicant, specifically

an irrigation controller comprising a counter coupled to the clock signal and configured to provide a bridge enable signal and a valve enable signal and an oscillator freeze signal, a switch circuit configured to selectively provide electrical power to an external load responsive to the bridge enable signal and an optical switch circuit configured to selectively provide electrical power to another external load responsive to the valve enable signal and the comparison signal, the oscillator being further configured to halt the providing the clock signal responsive to the oscillator freeze signal, together in combination with the other claimed features of applicant's invention. The closest prior art being Lattery and Bireley et al, however, these references do not disclose or teach the above claim limitations and it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the references to include the above claim limitations.

6. The following is an examiner's statement of reasons for allowance of claims 39-43: The prior art did not teach or suggest an apparatus for controlling irrigation as claimed by the applicant, specifically an apparatus comprising a sensor including a pair of spaced insulated conductors, the pair of spaced insulated conductors supported in a fill material within a water-permeable shell, an ancillary circuit electrically coupled to the sensor and a controller electrically coupled to the ancillary circuit and configured to selectively provide a valve control signal responsive to a comparison of the electrical moisture signal and a selective threshold signal, together in combination with the other claimed features of applicant's invention. The closest prior art being Lattery, however, this reference does not disclose or teach the above claim limitations and it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the reference to include the above claim limitations.

7. The following is an examiner's statement of reasons for allowance of claims 44 and 45: The prior art did not teach or suggest a method for controlling an irrigation system as claimed by the applicant, specifically a method comprising the steps of installing a sensor including a pair of helically wound insulated conductors supported in a sand fill within a zone to be irrigated, coupling a bridge circuit to the sensor, coupling a controller to the bridge circuit, energizing the bridge circuit for a period of time using the controller, developing an electrical moisture signal corresponding to the electrical capacitance for the period of time using the bridge circuit, ignoring the electrical moisture signal for a portion of the period of time using the controller, comparing the electrical moisture signal with a selective threshold signal using the controller, and selectively providing a valve control signal to at least one valve within the zone responsive to the comparing using the controller, together in combination with the other claimed steps of applicant's invention. The closest prior art being Lattery, however, this reference does not disclose or teach the above claim method steps and it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the reference to include the above method steps.

8. The following is an examiner's statement of reasons for allowance of claim 46: The prior art did not teach or suggest a method for controlling an irrigation system having two zones as claimed by the applicant, specifically a method comprising the steps of conducting electrical power to a bridge circuit coupled to a sensor for a sensing period of time defined by the controller, sensing ground moisture concentration within a zone with the sensor and providing a corresponding moisture signal to the controller using the bridge circuit, ignoring the moisture signal for a first portion of the sensing period of time using the controller, comparing the

moisture signal to a selectively adjustable threshold signal using the controller, selectively energizing an external load associated with the zone for a later portion of the watering period of time responsive to the comparing, the later portion beginning after the sensing period of time has ended, removing electrical power from the set of contacts on the controller after completion of the watering period of time using the time clock, providing electrical power for a second watering period of time to a second set of contacts on the controller using the time clock, the second water period beginning after completion of the watering period, together in combination with the other claimed steps of applicant's invention. The closest prior art being Lattery and Bireley et al, however, these references do not disclose or teach the above claim method steps and it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the references to include the above method steps.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven J. Ganey whose telephone number is (571) 272-4899. The examiner can normally be reached on Monday, Tuesday, Wednesday, and Thursday from 8:00 AM to 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel, can be reached on (571) 272-4919. The fax phone number for this Group is (571) 273-8300.

sjg

1/20/06

  
STEVEN J. GANEY  
PRIMARY EXAMINER

1/20/06